

Two Species of *Marietta* Motschulsky (Hymenoptera, Aphelinidae) New to Korea

Cheng-De LI, Bong-Kyu BYUN¹⁾ * and Woon-Ik BAE¹⁾

College of Forestry Resources and Environment, Northeast Forestry University, Harbin,
150040, P. R. China

¹⁾Korea National Arboretum, Prov. Gyeonggi, 487-821 Korea. E-mail: bkbyun@foa.go.kr

Abstract Two species, *Marietta carnesi* (Howard) and *M. picta* (Andre) are reported for the first time from Korea and a key is given for separating the females.

Key words Chalcidoidea, Aphelinidae, *Marietta carnesi*, *Marietta picta*, systematics, Korea

INTRODUCTION

The genus *Marietta* was established by Motschulsky in 1863 and a total of 19 species has been known worldwide to date (Woolley, 1997). Most, if not all, are external hyperparasites associated with scale insects. The species of genus *Marietta* is very close to those of genus *Aphytis* Howard, which are exclusively parasitic on Diaspididae, but can be easily distinguished from the later by relatively short propodeum, single plate pronotum, and absence of crenulae in middle of posterior margin of propodeum.

In Korea, Paik (1978) listed an undetermined species *Marietta* sp. with no specific name, which was collected from Wando, Province Jeollanam-do on *Lepidosaphes ulmi* (Linnaeus, 1758) (Homoptera: Diaspididae). During the systematic study of Korean Aphelinidae, we have found two species of the genus, *M. carnesi* (Howard, 1910) and *M. picta* (Andre, 1878) as new to the Korea. Brief redescrptions for the species were given with known host ranges, and a key is given for separating the females. All the material examined are now preserved in the Entomological Collection of Korea National Arboretum.

***Marietta* Motschulsky, 1863** 꽃날개좀벌속 (新稱)

Marietta Motschulsky, 1863. Bull. Soc. Imp. Natur. Moscou., 36: 51. Type-species: *Marietta leopardina* Motschulsky, by monotypy.

Perissopterus Howard, 1895. Tech. Ser. U. S. Dept. Agr. Div. Ent., 1: 20. Type-species: *Aphelinus pulchellus* Howard, by original designation.

* To whom correspondence should be addressed.

Pseudaphelinus Brethes, 1918. Anls. Sco. Rur. Argentina, 52: 157. Type-species: *Pseudaphelinus caridei* Brethes, by monotypy and original designation.

Diagnosis. Female: Body and legs either spotted or banded or both. Forewing with contrasting areas of dark and hyaline setae or with infuscated patterns. Head in dorsal view about as wide as thorax, in front view a little wider than height. Eyes large, glabrous. Malar space short than length of eye. Mandible with two teeth and one truncation; maxillary palpi 2 segmented and labial palpi 1 segmented. Antenna 6 segmented; scape sometimes expanded beneath; the first and the second funicle segments small; the third considerably larger, about as wide as club; club large, one segmented. Pronotum entire; midlobe of mesoscutum obviously wider than long with numerous setae; metanotum relatively longer, at least as long as, but usually obviously longer than propodeum. Forewing with linea calva not well defined. Marginal fringe short; marginal vein longer than submarginal vein; stigmal vein short, enlarged at apex. Hind wing hyaline. Tarsi 5 segmented. Ovipositor protruding slightly.

Body 0.5–1 mm long, rarely longer than 1 mm.

Male. Antenna 5–6 segmented. In some species with brachypterous form. Male genitalia with digitus and parameres.

Hosts. Usually external hyperparasites of Diaspididae, Coccidae, Psyllidae, and other Hymenoptera.

Distribution. Cosmopolitan.

***Marietta carnesi* (Howard) 얼룩무늬꽃날개좀벌 (新稱)**

(Figs 1–3)

Perissopterus carnesi Howard, 1910. Ent. News, 21: 162–163.

Marietta indica Narayanan, 1961. Proc. Nat. Inst. Sci. India (Series B), 26: 21.

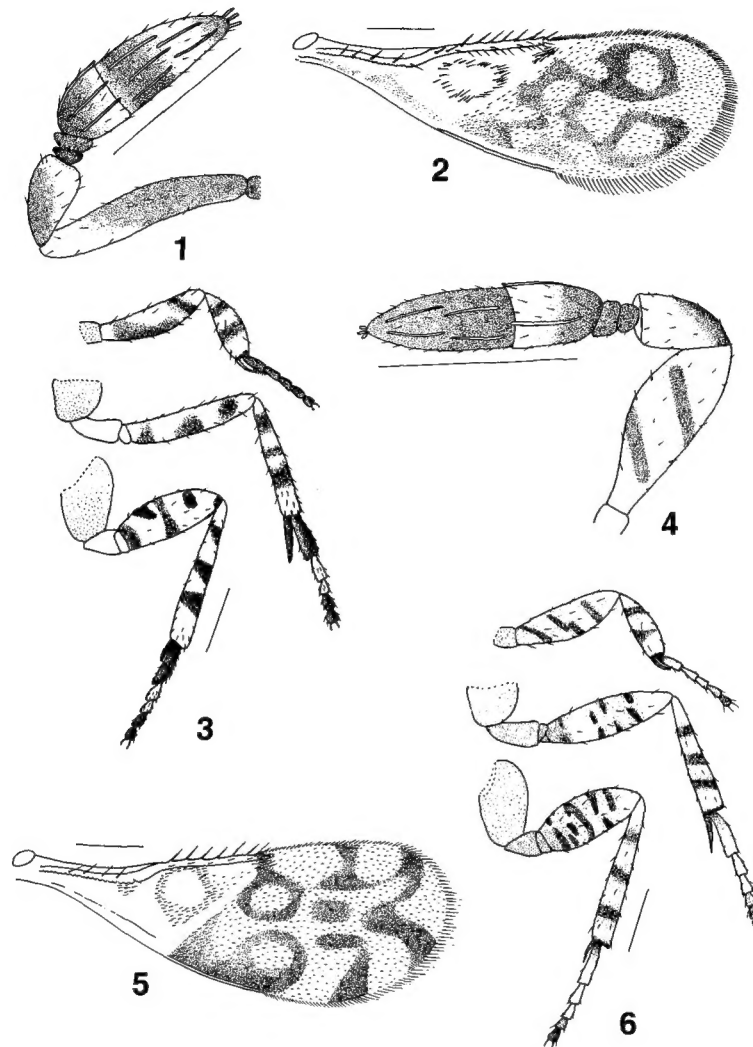
Marietta carnesi: Nikol'skaya and Jasnosh, 1966. Aphelinids of the European Part of the USSR and the Caucasus. 164.

Marietta carnesi: Liao *et al.*, 1987. Economic insect fauna of China. Fasc. 34. Hymenoptera: Chalcidoidea. Science Press, Beijing, China. 149.

Marietta carnesi: Huang, 1994. Systematic studies on Aphelinidae (Hymenoptera: Chalcidoidea) of China. Chongqing Publishing House, Chongqing, China. 234–237.

Marietta carnesi: Jasnosh, 1995. Aphelinidae. In Lehr, P.A. (eds), Key to the Insects of Russian Far East. Hymenoptera. 4(2): 523–524.

Description. Female: Head brownish–yellow, except occiput around foramen, near mouth, lower part of cheeks and apex of mandibles dark brown. Dorsum of thorax grayish–yellow with white spots. Dorsal part of gaster dark brown, each side white with segmentally arranged dark strips and spots. Antennal scape (Fig. 1) dark brown except apex and sometimes dorsal part pale; pedicel white except dorsal base largely dark brown; first, second funicle segments, base of third funicle segment and club in basal half and about one–fourth of apex dark brown. Forewing infuscated with areas of contrasting coarse and slender setae as shown in Fig. 2. Legs (Fig. 3) white and maculated with dark brown bands or spots. All coxae dark brown; second and third tarsi of middle and hind legs white, rest of tarsi dark brown to blackish–



Figs 1-6. 1. Female antenna of *Marietta carnesei* (Howard); 2. ditto, forewing; 3. ditto, legs (fore, middle, hind); 4. female antenna of *Marietta picta* (Andre); 5. ditto, forewing; 6. ditto, legs (fore, middle, hind). [Scales: 100 μ m]

brown; tibial spurs blackish-brown. Ovipositor sheaths dark brown.

Body 0.5–0.7 mm long.

Mandible with two acute teeth and one truncation; maxillary palpi 2 segmented and labial palpi 1 segmented. Antenna finely setous, 6 segmented; scape slender, 5.0–6.5 times as long as wide; pedicel 1.8–1.9 times as long as wide and about equal in length to three funicle segments combined; first two funicle segments small, third segment larger, 1.0–1.3 times as long as wide and nearly one-half as long as club, with 2–3 longitudinal sensillae; club 2–3 times as long as wide, with 7–8 longitudinal sensillae.

Mesoscutum with about 20 fine setae, each parapsis with 3 short setae, each axilla with 2 setae. Scutellum with 2 pairs of setae, the discoid sensilla closer to the posterior than to the anterior pair.

Metanotum long, about one-half as long as scutellum, with diamond-like sculpture on middle part. Propodeum shorter than metanotum.

Forewing 3.2 times as long as wide; marginal fringe short, about 0.2 times as long as maximum width of disc; submarginal vein slightly shorter than marginal vein, with 3–5 dark brown setae; marginal vein with 7–8 dark brown setae in front margin, but several setae at base usually in light color; marginal vein also with 4 dark coarse setae; stigmal vein short, with 6–7 dark brown setae on the disc just below the stigmal vein; 30–40 dark brown setae below the marginal vein nearly forming a pattern of triangle; outside of linea calva densely setose, setae brown on the patterns and a little coarser near the linea calva. Base and costal cell of forewing without setae.

Mid-tibial spur about as long as or slightly shorter than basitarsus.

Apex of gaster protruding slightly. Tergite I with transverse sculptures anteriorly, tergites I–V reticulate on both sides, and each tergite more or less reticulate posteriorly. Tergites V–VI each with 6–8 fine setae, syntergum reticulate anteriorly, with 8–10 setae. Cerci close to posterior spiracles, with 2 long setae and 1 short setae. Ovipositor protruding slightly at apex of abdomen; ovipositor shaft about 2 times as long as middle tibia; ovipositor sheaths about 1.31 times as long as middle basitarsus.

Male: The coloration and structure of body, legs, and antennae similar to female. Male genitalia 0.83 times as long as middle tibia.

Material examined. 11 ♀, 9 ♂, Cheongju City, Chungcheongbuk-do, 9 VIII 2001, ex *Pseudaulacaspis pentagona* (Targioni Tozzetti) on *Prunus mume* Sieb. et Zucc.; 1 ♀, Suwon City, Gyeonggi-do, 2 VIII 2001, ex *P. pentagona* on *Prunus armeniaca* vr. *ansu* Max.; 9 ♀, 4 ♂, Suwon City, Gyeonggi-do, 2 VIII 2001, ex *Pseudaulacaspis cockerelli* (Cooley) on *Taxus cuspidata* S. et Z.; 2 ♂, Daejeon City, 7 VIII 2001, ex *P. pentagona* on *P. armeniaca* vr. *ansu* ♀, 2 ♂, Daejeon City, 7 VIII 2001, ex *P. pentagona* on *Prunus avium* L.; 2 ♂, Sangju City, Gyeongsangbuk-do, 8 VIII 2001, ex *P. pentagona* on *Prunus serrulata* var. *spontanea* (Max.) Wils.; 1 ♀, 1 ♂, Pocheon county, Gyeonggi-do, 31 VIII 2001, ex *Lepidosaphes pini* (Maskell) on *Pinus densiflora* for. *muticaulis* Uyeki.

Hosts. *Antonina crawii* Cockerell, *Lepidosaphes pini* (Maskell), *Pseudaulacaspis pentagona* (Targioni Tozzetti), and *P. cockerelli* (Cooley). According to the literatures, it also parasite on *Aonidiella aurantii* (Maskell), *Chrysomphalus aonidum* (Linnaeus), *Cornuaspis beckii* (Newman), *Leucaspis japonica* Cockerell, *Parlatoria pergandii* Comstock, *Pseudonidia trilobiformis* (Green), *Temnaspidotus destructor* (Signoret), and *Unaspis yanonensis* (Kuwana).

Distribution. Korea (Gyeonggi-do, Chungcheongbuk-do, Gyeongsangbuk-do, Daejeon), Japan, China, Russia (Far East), India, Italy, Spain, North America, Hawaii, Australia, Mauritius, New Caledonia, West Caroline Islands.

Remarks. This widespread species can be easily recognized by the patterns of forewing, slender antennal scape, and dark brown bands or spots on body and legs.

***Marietta picta* (Andre) 포범무늬꽃날개좀벌 (新稱)**

(Figs 4–6)

Agonioneurus pictus Andre, 1878. Ann. Soc. Entom. France, (5)5: 85.

Marietta picta: Nikol'skaya and Jasnosh, 1966. Aphelinids of the European Part of the USSR and the

Caucasus. 165–166;

Marietta picta: Liao *et al.*, 1987. Economic insect fauna of China. Fasc. 34. Hymenoptera: Chalcidoidea. Science Press, Beijing, China. 149.

Marietta picta: Jasnosh, 1995. Aphelinidae. In Lehr, P.A. (eds), Key to the Insects of Russian Far East. Hymenoptera. 4 (2): 523–524.

Description. Female: Body yellow. Head with two fine transverse brown line on above the mouth and below the antennae respectively. Occiput around foramen, posterior margin of eye, and apex of mandibles black. Head and thorax with black spots at the bases of setae. Antenna (Fig. 4) light yellow; scape with two black oblique bands; base of pedicel and funicle segment III black; funicle segment I, II and club black. Legs (Fig. 6) light yellow, femora and tibia with black transverse bands. Dorsal side of abdomen and ventral side in central portion brown. Both side of abdomen with segmentally arranged dark reticulate strips, and within some of them with black spots.

Body about 0.5 mm long.

Head in dorsal view transverse; eyes somewhat peach-shaped, narrow in upper side and wide in lower side. Face narrowest at the level of anterior ocellus; malar space as long as eye width; upper limits of toruli slightly below lower eye level. Scape expended beneath, especially on distal part, about 3 times as long as wide; pedicel 2 times as long as wide, and a little longer than the third funicle; the third funicle about 2.5 times as long as funicle I and II combined, with 1–2 longitudinal sensillae; club nearly 2 times as long as the third funicle, with 4–6 longitudinal sensillae arranged by two rows.

Pronotum with 10 setae along posterior margin. Forewing relatively short, less than 2.5 times of its own width. Forewing with a speculum at base and a not well defined linea calva; disc with contrasting areas of dark and hyaline setae with infuscated patterns as shown in Fig. 5; mid-tibial spur slightly shorter than basitarsus.

Ovipositor sheaths about one-third of ovipositor shaft.

Male: Tip of antennal club and funicle III pale; dorsal surface of gaster reticulate. Phallobase of genitalia 4 times as long as wide.

Material examined. 3 ♀ (macropterous), 1 ♀, 1 ♂ (brachypterous), Daejeon City, 7 VIII 2001, ex *Eriococcus lagerstroemiae* Kuwana on *Lagerstroemia indica* L.; 1 ♀ (macropterous), 3 ♂ (brachypterous) Daejeon City, 7 VIII 2001, ex *Antonina crawii* Cockerell on *Sasa borealis* (Hack.) Makino.

Hosts. *Antonina crawii* Cockerell, *Eriococcus lagerstroemiae* Kuwana. According to the literatures, it also parasite on *Acanthecoccus* sp., *Eriopeltis lichlensteini* Sign., *E. araxis* Borchs. *Eulecanium* sp., *Pseudococcus fesus* Sign., and *Sphaerolecanium prunastri* Fonsc.

Distribution. Korea (Daejeon), China, Russia, Europe.

Remarks. This species can be easily recognized by the patterns of forewing, expended antennal scape with two black oblique bands, and black spots at the bases of setae on head and thorax.

Key to the species of *Marietta* from Korea, females

1. Antennal scape slender, 5.0–6.5 times as long as wide; head and thorax without black spots at the bases of setae; forewing shown as in Fig. 2 *M. carnesi* (Howard)

- Antennal scape expended beneath, about 3 times as long as wide, with two black oblique bands; head and thorax with black spots at the bases of setae; forewing shown as in Fig. 5 *M. picta* (Andre)

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